
MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN FOR SHIPS

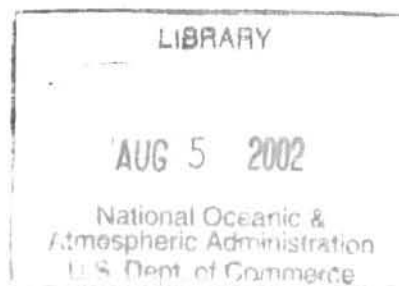
Prepared for:

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Marine Entanglement Research Program
Northwest and Alaska Fisheries Center
Seattle, WA

Kearney/Centaur Division
A.T. Kearney, Inc.
Alexandria, VA

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Contract No. 52ABNF800132

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December 1989

PREFACE

This Model Plastics Refuse Control and Minimization Plan for Ships was prepared by the Kearney/Centaur Division of A.T. Kearney, Inc. for the National Oceanic and Atmospheric Administration under Contract Number 52ABNF800132. The plan outlines techniques being used by the shipping industry to comply with MARPOL Annex V requirements that prohibit at sea disposal of plastics and place restrictions on at sea disposal of other types of garbage. It includes examples of different formats for a plastics control and minimization plan. It also includes techniques for use in crew education and training about MARPOL Annex V and the consequences of marine debris. This document is part of a marine debris education program for the shipping industry.

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Alexandria, VA

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Introduction

On December 31, 1988, with the entry into force of MARPOL Annex V, the way the shipping industry handles garbage changed. Over the side is no longer the unquestioned practice for garbage disposal. MARPOL Annex V prohibits disposal of plastics in the ocean and specifies the distance from shore that all other garbage may be dumped. It does not, however, specify how compliance is to be achieved. The appropriate approach to compliance varies and depends on a number of factors including route, type and size of vessel, on board garbage handling and processing equipment, storage space, and crew size.

Plastics control and minimization are integral parts of MARPOL Annex V compliance. This document presents a model plastics control and minimization plan. It was developed based on guidance documents on MARPOL Annex V implementation, shipboard waste management plans, and actual practices and techniques used by shipping companies to comply with MARPOL Annex V.

The plan is divided into three parts:

- Techniques to Control and Minimize Plastics on Vessels. This section presents examples of some of the techniques used by shipping companies to comply with MARPOL Annex V.
- Model Plastics Refuse Control and Minimization Plans for Ships. This section presents examples of plans to reduce and control plastic garbage on vessels. These model plans are also examples of different approaches to MARPOL Annex V compliance.
- Marine Debris Education Program for the Shipping Industry. This section organizes existing marine debris education techniques and materials into a crew awareness training program on MARPOL Annex V and marine debris.

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Techniques to Control and Minimize Plastics on Vessels

Techniques being used on vessels to handle plastic garbage under MARPOL Annex V and to reduce the amount of plastic on board are outlined below. These techniques are organized under the major phases of waste management -- collection and separation, processing, storage, and disposal -- and minimization of plastic garbage through control of plastics taken on board.

I. Collection and Separation

Separation of plastic garbage from all other garbage is seen by many to be the key to successful waste management under MARPOL Annex V. This is particularly true when the compliance approach does not include incineration.

- Plastic items are not all easily identifiable. To help identify what is plastic, develop a list of plastic items on board and incorporate it into the vessel's waste management plan. An example of a sample list is shown in Exhibit 1.
- Separate plastics from other waste where the waste is generated to save the time and hassle of separating garbage collected at a central location and separated at a different place.
- Provide separate garbage receptacles clearly marked "Plastics Only" (or the equivalent) and "All Other Garbage" (or the equivalent). Although specially made receptacles with the labelling burned onto the outside can be purchased, stencil or hand lettering can be used to label the receptacles.
- Provide garbage receptacles in pairs -- one marked "Plastics Only" and the other marked "All Other Garbage".
- To further differentiate garbage receptacles, use a different color for the receptacle used for plastics and that used for all other garbage. Use a plastic garbage bag to line the "Plastics Only" receptacle. Use a paper or cloth bag to line the receptacle for all other garbage. Alternatively, use different colored garbage bags to differentiate types of garbage.
- On vessels with "foreign garbage" i.e., garbage that must be handled according to U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) regulations, separate food contaminated plastics from other garbage if the amount of food contaminated plastic warrants it. Garbage which must be handled according to USDA regulations is more expensive to dispose of than other types of garbage. In some cases, not enough non-food plastic garbage is generated to warrant the three garbage receptacle approach. In such cases, a receptacle for all plastic garbage and one for all other garbage is sufficient.
- Remove food waste from food plastic wrappings to reduce storage and associated odor problems. Dispose of food waste according to the at sea disposal limitations.
- Post a placard which states that MARPOL Annex V prohibits disposal of plastics in the ocean in areas where garbage is generated and near garbage receptacles. (Note: Proposed U.S. Coast Guard regulations require prominently displayed placards on vessels that are 26 feet in length or more. The placards must: 1) be made of durable material, 2) measure at least 9 inches wide by 4 inches high with lettering no smaller than 1/8 of an inch, 3) summarize the MARPOL Annex V at sea garbage disposal limitations, and 4) indicate that violators are subject to a civil penalty of up to a \$25,000 fine and imprisonment.)

Exhibit 1

Identifying Plastic Items

U.S. Coast Guard regulations CFR 33 Part 151.05 define plastic as follows:

Plastic means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers and is formed or shaped during either manufacture of the polymer or fabrication into a finished product by heat or pressure or both.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: Food wrappings, personal hygiene products, packaging (vaporproof barriers, bottles, containers, liners), ship construction (fiberglass and laminated structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, electrical and electronic components), disposable eating utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, synthetic ropes, and lines.

Further examples of plastic items are:¹

- Cigarette pack cellophane wrappers
- Caps to shaving cream cans
- Audio and video cassettes and tape
- Net sacks or bags for vegetables
- Candy wrappers
- Foam cups
- Liners in individual serving size cereal boxes
- 35 mm film and film canisters
- Disposable razors
- Cleaning containers
- Filament tape
- Foam egg cartons
- Fluorescent light covers
- Nylon webbing, cargo nets, and safety harnesses
- Packing materials such as foam sheets, peanuts, or bubble wrap
- Laminated pages
- Yogurt cups
- Milk jugs
- Lids to snack cans such as peanuts and potato chips
- Disposable aprons and gloves
- Packing slip envelopes
- Ball point pens

¹ Based in part on the "Ship's Guide to Recent Navy Initiatives for Shipboard Solid and Plastics Waste Management" prepared by the Office of the Chief of Naval Operations, November 1988 and the results of surveys of debris collected during beach clean ups.

- Designate one individual to see that garbage is separated and sorted properly and that no plastic is disposed of at sea.

II. Processing

- Do not place plastic or other solid waste in the boiler.
- Trash Compactors: Use on board trash compactors to reduce the volume of plastics before on board storage and shore disposal.
- Incinerators: Separate plastic items too large to fit through the incinerator door from other garbage and store them on board for shore disposal. Alternatively, break plastic item too large to fit through the incinerator door into pieces small enough to fit into the incinerator and incinerate.
- Grinders: Remove all food wastes from packaging before these wastes are ground.

III. Storage

- Designate garbage storage areas on the vessel.
- Store disposable garbage in clearly marked containers separate from non-disposable garbage.
- Store disposable garbage on board until it can be disposed of at sea according to the MARPOL Annex V at sea garbage disposal limitations. (See Exhibit 2.)

IV. Disposal

- Dispose of all plastic garbage in port or use an on board incinerator and dispose of the ashes according to the MARPOL Annex V at sea dumping limitations. (See Exhibit 2.)
- Notify the port or terminal 24 hours in advance if there will be a need for APHIS approved garbage handling facilities. Note: This is a U.S. Coast Guard regulation (33 CFR 151.65).
- Dispose of all other garbage following the MARPOL Annex V at sea garbage disposal limitations. (See Exhibit 2.)
- Post a copy of the MARPOL Annex V at sea disposal limitations in the galley and the garbage collection areas.

V. Control of Plastics Taken On Board

- Request non-plastic items when ordering supplies and where non-plastic substitutes are possible (e.g., paper cups instead of foam cups, wooden coffee stirrers instead of plastic ones).
- Request non-plastic packaging when ordering supplies.
- Remove plastic packaging and disposed of it onshore before leaving port.
- Substitute washable items or reusable items for disposable plastic items.

Exhibit 2

MARPOL 73/78 Annex V: Summary of Garbage Discharge Restrictions

Garbage Type	All Vessels Except Offshore Platforms and Associated Vessels	
	Outside Special Areas (33 CFR 151.69)	In Special Areas ² (33 CFR 151.71)
Plastics - Includes synthetic ropes and fishing nets and plastic bags	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packing materials	Disposal prohibited less than 25 miles from nearest land	Disposal prohibited
Paper rags, glass, metal bottles, crochery and similar refuse	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Paper, rags, glass, etc. comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited
Food waste not comminuted or ground	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Food waste comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited less than 12 miles from nearest land
Mixed refuse types	Footnote 3	Footnote 3
¹ Comminuted or ground garbage must be able to pass through a screen with a mesh size no larger than 25 mm. (1 inch) ² Special areas for Annex V are the Mediterranean, Baltic, Red and Black Seas, and Persian Gulf areas. Regulations for Special Areas take effect in accordance with Regulation 5(4)(b). ³ When garbage is mixed with other harmful substances having different disposal or discharge requirements, the more stringent disposal restrictions apply.		

Model Plastics Refuse Control and Minimization Plans for Ships

Just as there is no prescribed compliance approach for MARPOL Annex V, there is no prescribed format for a plan to manage garbage at sea. However, at a minimum, proposed U.S. Coast Guard regulations for Waste Management Plans require that such plans describe procedures for processing, and disposing of the vessel's garbage in keeping with MARPOL Annex V and designate the person in charge of the vessel. Examples of a plastic refuse control and minimization plan for two sets of circumstances using different formats are presented on the following pages. The examples include the following features:

- Example 1 assumes: Plastics are separated from other garbage on board by vessel personnel and stored on board for shoreside disposal into port garbage reception facilities. A trash compactor is used to reduce the volume of plastic garbage before storage. The trash compactor is the only garbage handling and processing equipment on board. Garbage coming from foreign waters subject to APHIS regulations is generated. Non-plastic garbage is disposed of according to MARPOL Annex V.
- Examples 2 assumes: An incinerator is the only garbage handling and processing equipment on board and is used to dispose of all burnable garbage. Non-burnable garbage is disposed of according to MARPOL Annex V or in port. Garbage coming from foreign waters subject to APHIS regulations is generated.
- Format 1 uses an outline style.
- Format 2 lists the operating principles of the plan.
- Flow charts, lists, and exhibits are incorporated in different ways in the four examples.

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MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

Example 1: Format 1

Assumes: Plastics are separated from other garbage on board by vessel personnel and stored on board for shoreside disposal into port garbage reception facilities. A trash compactor is used to reduce the volume of plastic garbage before storage. The trash compactor is the only garbage handling and processing equipment on board. Garbage coming from foreign waters subject to APHIS regulations is generated. Non-plastic garbage is disposed of according to MARPOL Annex V.

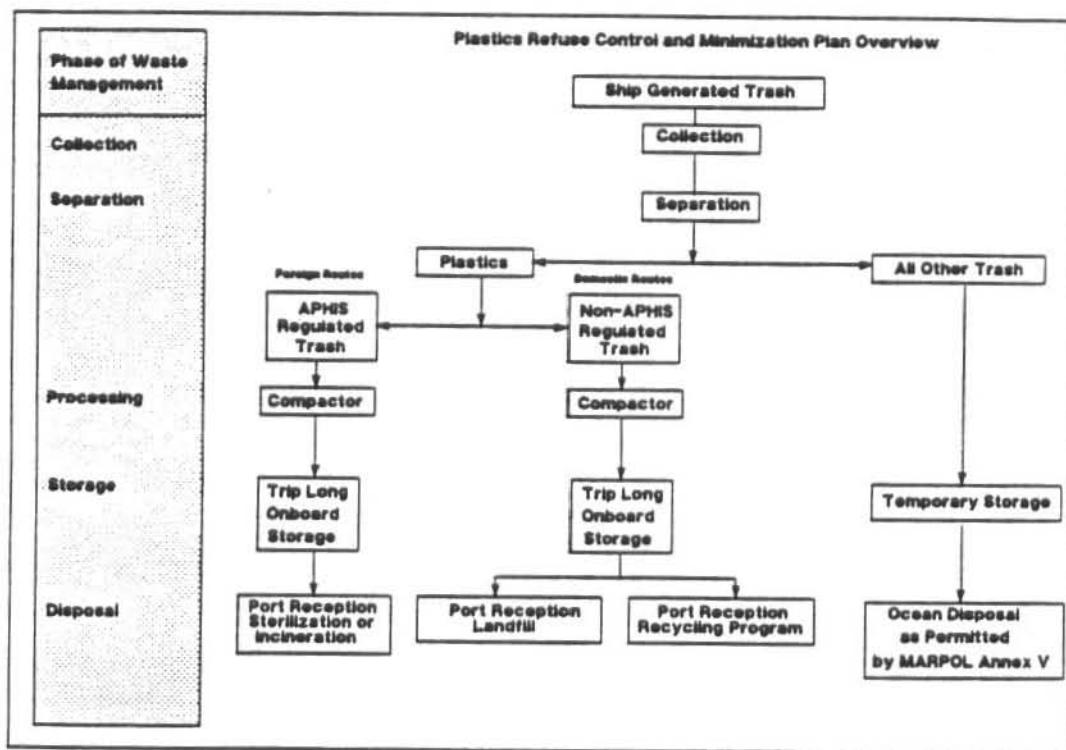
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MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

(Fill in the person's name) is the designated person in charge of the (fill in the vessel name).

Plan Overview

Plastics are: 1) separated from all other trash by vessel personnel at the source, 2) compacted in an on board trash compactor, 3) stored on board, and 4) disposed of into port garbage reception facilities. Foreign garbage subject to APHIS regulations is disposed of into port incineration or sterilization systems. All other trash is disposed of according to MARPOL Annex V. The following is a generalized flow chart of the plan's approach to trash management at sea:



I. Collection and Separation

A. Separate plastic trash from other types of trash at the source. Retain all plastic trash on board for shoreside disposal.

1. The (fill in the job title or position) is responsible for assuring proper separation of plastics from other types of trash before final disposal. Each officer and crew member is responsible for proper separation of plastics from other garbage in the work areas, public areas, and living quarters.
2. Refer to the "List of Plastic Items On Board" for guidance in determining whether an item is plastic.

3. If there is a question whether an item or any part of an item is plastic, retain it on board for shoreside disposal.
- B. Dispose of plastics in trash receptacles marked "Plastics Only." For other trash, use the receptacles marked "All Other Trash."
- C. Remove food waste from plastic food wrappings before placing them in the "Plastics Only" receptacle. Dispose of food waste according to the at sea disposal limitations summarized at the end of this plan.

II. Processing

- A. The (fill in the job title or position) is responsible for operating the trash compactor. Maintenance of the trash compactor is the responsibility of the (fill in the job title or the Department.)
- B. Use the trash compactor to reduce the volume of plastic waste before storage.
- C. Do not place plastic or other solid waste in the boiler.

III. Storage

- A. The (fill in the location on the vessel) is designated as the trash collection and storage area. The (fill in the job title or Department) is responsible for keeping the trash collection and storage area clean and orderly.
- B. The (fill in the job title or position) is responsible for assuring that properly separated trash is removed from public areas, work areas, and living quarters and placed in the proper receptacle in the trash collection and storage area.
- C. The Galley Force is responsible for assuring the properly separated galley waste is placed in the proper receptacle in the trash collection and storage area.
- D. Store plastic trash in the trash collection and storage area in leakproof containers for shoreside disposal.
- E. Store all other trash in the trash collection and storage area until it can be disposed of at sea according to the at sea disposal limitations.
- F. Store disposable trash in clearly marked containers separate from containers for non-disposable trash.
- G. Food waste and garbage contaminated by food waste coming to U.S. ports from foreign ports (except from Canadian ports) are required by the U.S. Department of Agriculture's Animal Plant and Health Inspection Service (APHIS) to be incinerated or sterilized. When trash is subject to APHIS regulations:
 1. Store trash in leakproof containers.
 2. Mark the container "Foreign Garbage."
 3. Store APHIS regulated garbage in containers separate from disposable trash and separate from non-disposable plastic trash that is not subject to APHIS regulations.

IV. Disposal

- A. Dispose of all plastic trash in port.
- B. Notify the U.S. port or terminal 24 hours in advance if there will be a need for:
1) APHIS approved garbage handling facilities, 2) disposal of medical wastes, or
3) disposal of hazardous wastes. The (fill in name of the master or the person in charge) is responsible for notifying the port or terminal.

Note: This is a U.S. Coast Guard regulation (33 CFR 151.65).

- C. The (fill in the name of the master or person in charge) will maintain the Coast Guard Refuse Record Book. The Refuse Record Book will be kept on board in the (fill in the name of the location). The (fill in the job title or position) is responsible for sending the Refuse Book to the U.S. Coast Guard (Commandant, G-MPS, U.S. Coast Guard, 2100 2nd Street, S.W., Washington, DC 20593-0001) within 30 days of:

- 1. the first anniversary of the initial entry;
- 2. the date all spaces for entries have been used;
- 3. the date this vessel changes owners; or
- 4. the date this vessel is no longer required to keep a record book.

Note: Recordkeeping requirements are a U.S. Coast Guard regulation (33 CFR 151.55).

- D. Keep written receipts from the waste hauler when trash is disposed of in port.
- E. Keep a copy of the at sea disposal limitations posted in the galley and the trash collection and storage area.
- F. Dispose of all other trash (non-plastic) following the at sea disposal limitations.
- G. Confirm that the vessel's distance from shore meets the at sea disposal limitations before dumping disposable trash at sea.

V. Minimize the Amount of Plastic On Board

- A. Request non-plastic items when ordering supplies and where non-plastic substitutes are possible.
- B. Request non-plastic packaging when ordering supplies.
- C. Remove plastic packaging and disposed of it onshore before leaving port.
- D. Keep plastic items to a minimum in the living quarters.

MARPOL 73/78 Annex V: Summary of Garbage Discharge Restrictions

Garbage Type	All Vessels Except Offshore Platforms and Associated Vessels	
	Outside Special Areas (33 CFR 151.69)	In Special Areas ² (33 CFR 151.71)
Plastics - includes synthetic ropes and fishing nets and plastic bags	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packing materials	Disposal prohibited less than 25 miles from nearest land	Disposal prohibited
Paper rags, glass, metal bottles, crochery and similar refuse	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Paper, rags, glass, etc. comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited
Food waste not comminuted or ground	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Food waste comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited less than 12 miles from nearest land
Mixed refuse types	Footnote 3	Footnote 3
¹ Comminuted or ground garbage must be able to pass through a screen with a mesh size no larger than 25 mm. (1 inch) ² Special areas for Annex V are the Mediterranean, Baltic, Red and Black Seas, and Persian Gulf areas. ³ Regulations for Special Areas take effect in accordance with Regulation 5(4)(b). When garbage is mixed with other harmful substances having different disposal or discharge requirements, the more stringent disposal restrictions apply.		

MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

Example 1: Format 2

Assumes: Plastics are separated from other garbage on board by vessel personnel and stored on board for shoreside disposal into port garbage reception facilities. A trash compactor is used to reduce the volume of plastic garbage before storage. The trash compactor is the only garbage handling and processing equipment on board. Garbage coming from foreign waters subject to APHIS regulations is generated. Non-plastic garbage is disposed of according to MARPOL Annex V.

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MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

1. (Fill in the person's name) is the designated person in charge of this vessel.
2. Separate plastic garbage from all other garbage. Retain all plastic garbage on board for shore disposal. Dispose of all other garbage according to the at sea garbage disposal limitations. See summary of the at sea garbage disposal limitations at the end of this plan for guidance. Keep a copy of this summary posted in the galley and garbage collection and storage areas at all times. Verify that the vessel's distance from shore meets the at sea garbage disposal limitations before dumping disposable garbage at sea.
3. The (fill in the job title or position) is responsible for assuring proper separation of plastics from other types of trash before final disposal. Each officer and crew member is responsible for proper separation of plastics from other garbage in the work areas, public areas, and living quarters.
4. Refer to the definition of "plastic" for guidance in determining what is plastic. If there is a question about whether an item or a part of an item is plastic, retain the item on board for disposal in port.

U.S. Coast Guard regulations CFR 33 Part 151.05 define plastic as follows:

Plastic means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers and is formed or shaped during either manufacture of the polymer or fabrication into a finished product by heat or pressure or both.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: Food wrappings, personal hygiene products, packaging (vaporproof barriers, bottles, containers, liners), ship construction (fiberglass and laminated structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, electrical and electronic components), disposable eating utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, synthetic ropes, and lines.

5. Use receptacles marked "Plastics Only" for plastic garbage. Use receptacles marked "All Other Garbage" for non-plastic garbage.
6. Food waste and garbage contaminated by food waste coming to U.S. ports from foreign ports (except from Canadian ports) are required by the U.S. Department of Agriculture's Animal Plant and Health Inspection Service (APHIS) to be incinerated or sterilized. When trash is subject to APHIS regulations: 1) separate plastic food wrappings from other plastic, 2) place plastic food wrappings in leakproof containers marked "Foreign Garbage", and 3) dispose of them into port sterilization or incineration systems. Dispose of food waste according to the at sea disposal limitations.
7. Use the trash compactor to reduce the volume of plastic garbage before storage. The (fill in the job title or position) is responsible for operating the trash compactor. Maintenance of the trash compactor is the responsibility of the (fill in the job title or Department.)
8. Store plastic garbage in (specify designated storage areas) for shoreside disposal. Store disposable garbage in clearly marked containers separate from the containers used for plastic garbage. Store "Foreign Garbage" in clearly marked containers separate from other garbage. The (fill in the job title or Department) is responsible for keeping the trash collection and storage area clean and orderly.

9. Dispose of plastic garbage in port.
10. Notify the U.S. port or terminal 24 hours in advance if there will be a need for: 1) APHIS approved garbage handling facilities, 2) disposal of medical wastes, or 3) disposal of hazardous wastes. The (fill in the name of the master or person in charge) is responsible for notifying the port or terminal.
11. The (fill in the name of the master or person in charge) is responsible for keeping the Coast Guard Refuse Record Book. The Refuse Record Book will be kept on board in the (fill in the name of the location). The (fill in the job title or position) is responsible for sending the Refuse Book to the U.S. Coast Guard¹ within 30 days of:
 1. the first anniversary of the initial entry;
 2. the date all spaces for entries have been used;
 3. the date this vessel changes owners; or
 4. the date this vessel is no longer required to keep a record book.

Note: Recordkeeping requirements are a U.S. Coast Guard regulation (33 CFR 151.55).
12. Keep written receipts from the trash hauler when trash is offloaded in port.
13. Request non-plastic items where possible for all vessel supplies. Request that supplies be delivered using non-plastic packaging. Keep plastic items to a minimum in the living quarters.
14. Do not use the boiler for disposing of plastics or other solid waste.

¹

Send Refuse Book to:

Commandant, G-MPS
U.S. Coast Guard
2100 2nd Street, SW
Washington, DC 20593-0001

MARPOL 73/78 Annex V: Summary of Garbage Discharge Restrictions

Garbage Type	All Vessels Except Offshore Platforms and Associated Vessels	
	Outside Special Areas (33 CFR 151.69)	In Special Areas ² (33 CFR 151.71)
Plastics - includes synthetic ropes and fishing nets and plastic bags	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packing materials	Disposal prohibited less than 25 miles from nearest land	Disposal prohibited
Paper rags, glass, metal bottles, crookery and similar refuse	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Paper, rags, glass, etc. comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited
Food waste not comminuted or ground	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Food waste comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited less than 12 miles from nearest land
Mixed refuse types	Footnote 3	Footnote 3
¹ Comminuted or ground garbage must be able to pass through a screen with a mesh size no larger than 25 mm. (1 inch) ² Special areas for Annex V are the Mediterranean, Baltic, Red and Black Seas, and Persian Gulf areas. ³ Regulations for Special Areas take effect in accordance with Regulation 5(4)(b). When garbage is mixed with other harmful substances having different disposal or discharge requirements, the more stringent disposal restrictions apply.		

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MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

Example 2: Format 1

Assumes: An incinerator is the only garbage handling and processing equipment on board and is used to dispose of all burnable garbage. Non-burnable garbage is disposed of according to MARPOL Annex V or in port. Garbage coming from foreign waters subject to APHIS regulations is generated.

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MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

I. Designated Person in Charge of the Vessel

(Fill in the person's name) is the designated person in charge of this vessel.

II. Collection and Separation

A. Separate burnable trash from non-burnable trash at the source. Retain all plastic trash which is not or can not be burned on board for disposal in port.

1. U.S. Coast Guard regulations CFR 33 Part 151.05 define plastic as follows:

Plastic means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers and is formed or shaped during either manufacture of the polymer or fabrication into a finished product by heat or pressure or both.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: Food wrappings, personal hygiene products, packaging (vaporproof barriers, bottles, containers, liners), ship construction (fiberglass and laminated structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, electrical and electronic components), disposable eating utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, synthetic ropes, and lines.

2. If it is uncertain whether an item or any part of an item is made of plastic and it can not be burned, store it in the (specify the designated trash collection and storage area) for disposal in port.

3. The (fill in the job title or position) is responsible for assuring proper separation of burnable from non-burnable trash and proper disposal of plastics and other types of trash. Every officer and crew member is expected to assist in the proper disposal of refuse on this vessel.

B. Remove food waste from plastic food wrappings. Dispose of food waste according to the at sea disposal limitations summarized at the end of this plan.

C. Separate plastic items too large to fit through the incinerator door from other garbage and store for disposal in port. Alternatively, break these items into pieces small enough to fit in the incinerator and incinerate them.

III. Processing

A. Do not place plastic or other solid waste in the boiler.

B. Use the incinerator to burn all burnable garbage.

C. The (fill in the job title or position) is responsible for operating the incinerator. The (fill in the job title or position) is responsible for maintaining the incinerator.

IV. Storage

- A. Store garbage to be incinerated in the (specify the designated garbage storage and collection area).
- B. Store plastic garbage which can not be burned on board in (specify the designated collection and storage area). Store non-burnable plastic garbage in receptacles separate from disposable garbage and separate from burnable garbage.
- C. Store all other non-burnable garbage on board until it can be disposed of at sea according to the at sea garbage disposal limitations.
- D. The (fill in the job title or Department) is responsible for the garbage collection and storage area.
- E. Food waste and garbage contaminated by food waste coming to U.S. ports from foreign ports (except from Canadian ports) are required by the U.S. Department of Agriculture's Animal Plant and Health Inspection Service (APHIS) to be incinerated or sterilized. When trash cannot be burned on board and is subject to APHIS regulations: 1) separate plastic food wrappings from other plastic, 2) place plastic food wrappings in leakproof containers marked "Foreign Garbage", and 3) dispose of them into port sterilization or incineration systems.

V. Disposal

- A. Dispose of all non-burnable, non-plastic garbage following the at sea garbage disposal limitations. Ashes and non-plastic clinkers may be discharged at sea beyond 12 miles from shore, except in Special Areas where disposal is prohibited. Ashes and non-plastic clinkers which can pass through a 1 square inch mess screen may be discharged beyond 3 miles from shore. Plastic clinkers must be stored in the (specify the designated storage area) and disposed of on shore. Special Areas are the Mediterranean, Baltic, Red and Black Seas, and the Persian Gulf area.
- B. Keep a copy of the at sea disposal limitations posted in the galley and the trash collection area.
- C. Confirm that the vessel's distance from the seacoast meets the at sea garbage disposal limitations before dumping disposable garbage at sea.
- D. A Coast Guard Refuse Record Book will be maintained by the (fill in the name of the master or person in charge). The Refuse Record Book will be kept on board in the (fill in the name of the location). The Refuse Book will be sent by the (fill in the job title or position) to the U.S. Coast Guard (Commandant, G-MPS, U.S. Coast Guard, 2100 2nd Street, S.W., Washington, DC 20593-0001) within 30 days of:
 - 1. the first anniversary of the initial entry;
 - 2. the date all spaces for entries have been used;
 - 3. the date this vessel changes owners; or
 - 4. the date this vessel is no longer required to keep a record book.

- E. Notify the U.S. port or terminal 24 hours in advance if there will be a need for:
1) APHIS approved garbage handling facilities, 2) disposal of medical wastes, or
3) disposal of hazardous wastes. The (fill in the name of the master or person in charge) is responsible for notifying the port or terminal.

Note: This is a U.S. Coast Guard regulation (33 CFR 151.65).

- F. Keep written receipts from the waste hauler or carterer when trash is offloaded in port.

VI. Minimize the Amount of Plastic On Board

- A. Request non-plastic items when ordering supplies and where non-plastic substitutes are possible.
- B. Request non-plastic packaging when ordering supplies.
- C. Remove plastic packaging and disposed of it onshore before leaving port.
- D. Keep plastic items to a minimum in the living quarters.

MARPOL 73/78 Annex V: Summary of Garbage Discharge Restrictions

Garbage Type	All Vessels Except Offshore Platforms and Associated Vessels	
	Outside Special Areas (33 CFR 151.69)	In Special Areas ² (33 CFR 151.71)
Plastics - Includes synthetic ropes and fishing nets and plastic bags	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packing materials	Disposal prohibited less than 25 miles from nearest land	Disposal prohibited
Paper rags, glass, metal bottles, crochery and similar refuse	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Paper, rags, glass, etc. comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited
Food waste not comminuted or ground	Disposal prohibited less than 12 miles from nearest land	Disposal prohibited
Food waste comminuted or ground ¹	Disposal prohibited less than 3 miles from nearest land	Disposal prohibited less than 12 miles from nearest land
Mixed refuse types	Footnote 3	Footnote 3
¹ Comminuted or ground garbage must be able to pass through a screen with a mesh size no larger than 25 mm. (1 inch) ² Special areas for Annex V are the Mediterranean, Baltic, Red and Black Seas, and Persian Gulf areas. ³ Regulations for Special Areas take effect in accordance with Regulation 5(4)(b). When garbage is mixed with other harmful substances having different disposal or discharge requirements, the more stringent disposal restrictions apply.		

MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

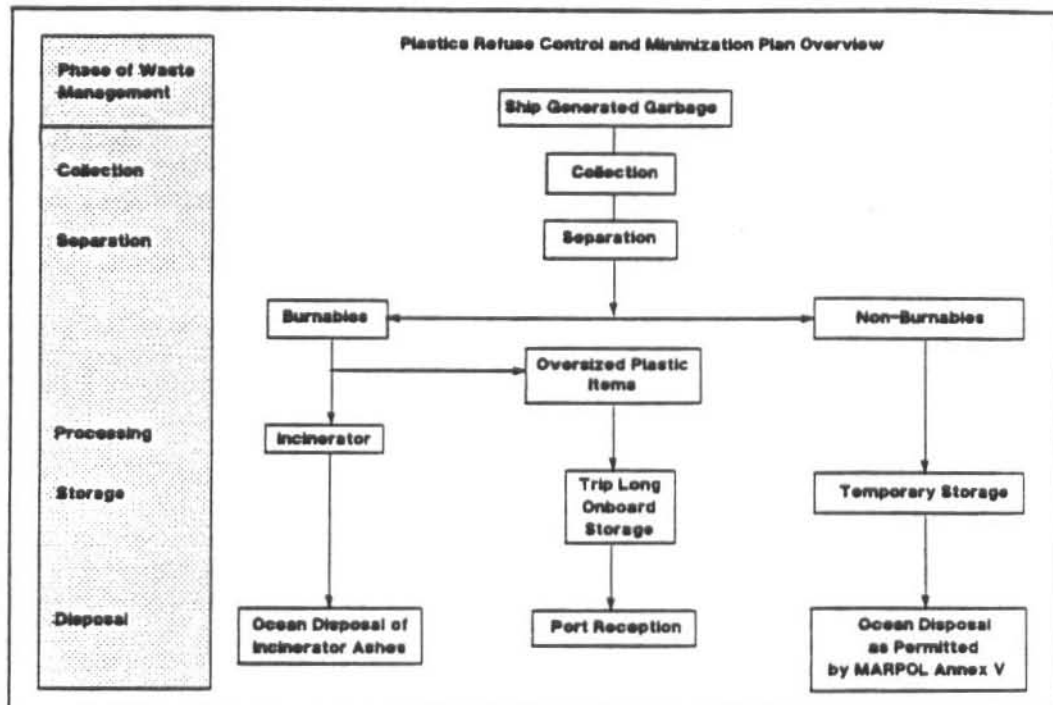
Example 2: Format 2

Assumes: An incinerator is the only garbage handling and processing equipment on board and is used to dispose of all burnable garbage. Non-burnable garbage is disposed of according to MARPOL Annex V or in port. Garbage coming from foreign waters subject to APHIS regulations is generated.

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MODEL PLASTICS REFUSE CONTROL AND MINIMIZATION PLAN

1. (Fill in the person's name) is the designated person in charge of this vessel.



2. The (fill in the job title or position) is responsible for assuring proper disposal of burnable and non-burnable trash. It is the responsibility of every officer and crew member to assist in proper disposal of refuse on this vessel.
3. Use the incinerator to dispose of all burnable garbage. Separate plastic garbage too large to fit through the incinerator door from all other garbage. Retain that plastic garbage on board for disposal in port. (Alternatively, break the plastic into pieces that will fit into the incinerator and incinerate.) Dispose of non-burnable garbage except in Special Areas (the Mediterranean, Baltic, Red and Black Sea, and the Persian Gulf Area) according to the at sea garbage disposal limitations summarized below:
 - Less than 3 miles from shore: do not dump **plastics**, paper, rags, glass, metal, crockery, dunnage, and food.
 - From 3 to less than 12 miles: do not dump **plastics**, and, if not ground to less than 1 inch, do not dump paper, rags, glass, metal, crockery, dunnage, and food.
 - From 12 to less than 25 miles: do not dump **plastics** and dunnage.
 - From 25 miles and beyond: do not dump **plastics**.

Ashes and non-plastic clinkers may be discharged at sea beyond 12 miles from shore, except in Special Areas where disposal is prohibited. Ashes and non-plastic clinkers which can pass through a 1 square inch mess screen may be discharged beyond 3 miles from shore. Plastic clinkers must be stored on board in the (specify the designated collection and storage area) and disposed of on shore.

4. In Special Areas (the Mediterranean, Baltic, Red and Black Seas, and the Persian Gulf area), dispose of non-burnable garbage according to the at sea garbage disposal limitations summarized below:
 - o From 3 to less than 12 miles from shore: do not dump plastics, paper, rags, glass, metal, crockery, dunnage, and food.
 - o From 12 miles and beyond: do not dump plastics, paper, rags, glass, metal, crockery, and dunnage. Food waste may be dumped at sea.
5. The (fill in the job title or Department) is responsible for operating the incinerator. The (fill in the job position or Department) is responsible for maintaining the incinerator.
6. Do not use the boiler for disposing of plastics or other solid waste.
7. Keep a copy of the at sea garbage disposal limitations posted in the galley and garbage disposal areas at all times. Verify that the vessel's distance from shore meets the at sea garbage disposal limitations before dumping disposable garbage at sea.
8. Refer to the definition of "plastic" for guidance in determining what is plastic. U.S. Coast Guard regulations CFR 33 Part 151.05 define plastic as follows:

Plastic means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers and is formed or shaped during either manufacture of the polymer or fabrication into a finished product by heat or pressure or both.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: Food wrappings, personal hygiene products, packaging (vaporproof barriers, bottles, containers, liners), ship construction (fiberglass and laminated structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, electrical and electronic components), disposable eating utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, synthetic ropes, and lines.

9. Remove food wastes from plastic wrappings before storage for disposal. Dispose of food waste according to the at sea disposal limitations.
10. Store garbage to be incinerated in (specify the designated storage areas). Keep garbage to be incinerated in containers separate from: 1) garbage stored for disposal in port and 2) non-burnable garbage to be disposed of at sea.
11. Store plastic garbage which can not be incinerated in (specify designated storage areas) for disposal in port. Store disposable garbage in clearly marked containers separate from the containers used for plastic garbage.
12. Food waste and garbage contaminated by food waste coming to U.S. ports from foreign ports (except from Canadian ports) are required by the U.S. Department of Agriculture's Animal Plant and Health Inspection Service (APHIS) to be incinerated or sterilized. When trash cannot be burned on board and is subject to APHIS regulations: 1) separate plastic food wrappings from other plastic, 2) place plastic food wrappings in leakproof containers marked "Foreign Garbage", and 3) dispose of them into port sterilization or incineration systems.

13. The (fill in the job title or Department) is responsible for maintaining the garbage collection and storage area.
14. Dispose of plastic garbage which can not be incinerated in port. Notify the U.S. port or terminal 24 hours in advance if there will be a need for: 1) APHIS approved garbage handling facilities, 2) disposal of medical wastes, or 3) disposal of hazardous wastes. The (fill in the name of the master or person in charge) is responsible for notifying the port or terminal.
15. Refuse disposal, including incinerated garbage, will be recorded in the Coast Guard Refuse Record Book. The (fill in the name of the master or person in charge) is responsible for keeping the Refuse Record Book which is on board in the (fill in the name of the location). The (fill in the job title or position) is responsible for sending the Refuse Book to the U.S. Coast Guard¹ within 30 days of:
 1. the first anniversary of the initial entry;
 2. the date all spaces for entries have been used;
 3. the date this vessel changes owners; or
 4. the date this vessel is no longer required to keep a record book.

Note: Recordkeeping requirements are a U.S. Coast Guard regulation (33 CFR 151.55).
16. Request non-plastic items where possible for all vessel supplies. Request that supplies be delivered using non-plastic packaging. Keep plastic items to a minimum in the living quarters.

¹

Send Refuse Book to:

Commandant, G-MPS
U.S. Coast Guard
2100 2nd Street, SW
Washington, DC 20593-0001

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Marine Debris Education Program for the Shipping Industry

The policy of individual shipping companies dictates how on board personnel are trained in garbage handling and processing under MARPOL Annex V. Typically, this includes on the job training and supervision. Information on the consequences of marine debris and entanglement explains why MARPOL Annex V implementation is important, helps to put MARPOL Annex V requirements into perspective, thereby making the requirements more than simply another set of government regulations. It is assumed that compliance with MARPOL Annex V by on board personnel will be made easier if the reasons for the new garbage handling and processing requirements are understood. Based on this assumption, marine debris education techniques and materials have been organized into a marine debris education program for the shipping industry. This section outlines the use of six approaches to marine debris and MARPOL Annex V education and identifies existing examples of each technique and how to obtain these materials.

The six techniques, as shown below, use written material, visual presentation, display items, and a participatory activity to educate on board and operations personnel about the consequences of marine debris and entanglement and the requirements of MARPOL Annex V.

Marine Debris Education Techniques for the Shipping Industry

Written Materials	Visual Presentation	Display Items	Participatory Activity
Brochures and Factsheets Reports and Magazine Articles List of Plastic Items On Board (Incorporate into vessel's Waste Management Plan)	Videos	Posters Placards	Develop List of Plastic Items On Board (Incorporate into vessel's Waste Management Plan)

Exhibit 3 summarizes the suggested uses of each marine debris education technique and/or material. Examples of some of the education materials described on the following pages are included in sheet protectors at the end of this section.

Exhibit 3

Use of Marine Debris Education Techniques and Materials
for the Shipping Industry

Marine Debris Education Technique and/or Material	Current Employees	New Employees	On the Vessel
Videos			
• Show on board personnel and shoreside operations personnel	X		
• Show new on board personnel as part of orientation		X	
• Retain copy on board for future viewing	X	X	X
Brochures and Factsheets			
• Distribute to new employees with orientation materials		X	
• Distribute to current employees through payroll office	X		
• Distribute to current employees using a self serve process	X		
• Incorporate into company manuals	X	X	
Reading Material on Marine Debris and Entanglement			
• Incorporate into new employee materials		X	
• Make available on board vessels	X	X	X
Posters			
• Display in garbage collection and disposal areas			X
• Display on way to garbage disposal and storage areas			X
Placards			
• Display in garbage collection, storage, and disposal areas			X
• Incorporate into company procedures manuals			X
List of Plastic Items on Board			
• Develop in cooperation with on board personnel	X		
• Incorporate into vessel's waste management plan			X

VIDEOS

Suggested Uses

- Show to all on board personnel and shoreside operations personnel.
- Show to all new on board personnel as part of orientation or on the job training.
- Retain a copy on board each vessel for additional viewing as needed.

Examples of Existing Videos

Title: Trashing the Ocean
Subject: Consequences of marine debris and entanglement
Producer: NOAA, National Marine Fisheries Service
Length: 7:30 minutes
Format: VHS
Language: English
Cost: \$10.00

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

Title: Marine Refuse Disposal Project
Subject: Pilot project at the Port of Newport, Oregon on port reception facilities for garbage
Producer: NOAA, National Marine Fisheries Service
Length: 9:08 minutes
Format: VHS
Language: English
Cost: \$10.00 (Comes on same tape as "Trashing the Ocean")

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

VIDEOS (continued)

Title: Marine Litter
Subject: Pollution from illegal disposal of substances such as plastics, and on board waste management. MARPOL Annex V requirements discussed.
Producer: Videotel Marine International
Length: 20 minutes
Format: VHS, U-Matic, or Betamax
Color Standard: NTSC, PAL, or SECAM
Language: English and other languages on demand
Cost: \$650
Available From: Videotel Marine International
Ramillies House
1/2 Ramillies Street
London W1V 1DF
United Kingdom
01-439 6301

Title: APHIS: 1st Line of Defense
Subject: Role of the Animal and Plant Health Inspection Service in protecting U.S. agriculture from pests and disease
Producer: U.S. Department of Agriculture
Length: 10:30 minutes
Format: VHS
Language: English and Spanish
On Loan From: U.S. Department of Agriculture
Animal and Plant Health Inspection Service, PPQ
Federal Building - Room 628
6505 Belcrest Road
Hyattsville, MD 20782
(301) 436-7472

BROCHURES AND FACTSHEETS

Suggested Uses

- Distribute to new on board and operations personnel with new employee materials.
- Distribute to current on board and operations personnel through payroll office with paycheck or pay receipt.
- Distribute by making brochures/factsheets available in common areas using a self-serve process.
- Incorporate into company manuals.

Examples of Existing Brochures and Factsheets

Title: Our Water Planet is Becoming Polluted with Plastic Debris (An 8 1/2 by 11 inch, six panel brochure.)
Subject: Problems and consequences of marine debris
Prepared By: NOAA, National Marine Fisheries Service and the Marine Refuse Disposal Project, Newport, OR
Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

Title: When it's done holding your ship's garbage, it could hold death for some marine animal (A black, white, and grey, 8 panel brochure.)
Subject: Problems and consequences of marine debris
Prepared By: NOAA, National Marine Fisheries Service, the Center for Marine Conservation, and The Society of the Plastics Industry, Inc.
Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

BROCHURES AND FACTSHEETS (continued)

- Title:** Plastic in the Ocean: What are we doing to clean it up?
Subject: The provisions of Public Law 100-220, The Marine Plastic Pollution Research and Control Act of 1987 which implements MARPOL Annex V in the United States, state and regional programs on marine plastic debris, and an annotated list of educational materials.
- Prepared By:** Washington Sea Grant, Marine Advisory Services
Available From: NOAA's Marine Debris Information Office or Washington Sea Grant
Center for Marine Conservation 3716 Brooklyn Avenue, N.E.
1725 DeSales Street, N.W. Seattle, WA 98105
Washington, DC 20036 (206) 543-6600
(202) 429-5609
- Title:** MARPOL V/MPPRCA and Ship Garbage Management
Subject: Answers to frequently asked questions about MARPOL Annex V and The Marine Plastic Pollution Research and Control Act of 1987. Uses a question and answer format.
- Prepared By:** R.W. Beck and Associates
Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

READING MATERIAL ON MARINE DEBRIS AND ENTANGLEMENT

Suggested Uses

- Incorporate a reprint of a magazine article on marine debris in new employee materials.
- Make reading materials (both reports and reprints of magazine articles) available on board vessels. Reprints of articles can be bound or kept in a notebook to keep articles together.
- Update collection of magazine articles periodically to provide new and current reading material.

Examples of Existing Reports

- Dealing with Garbage Under MARPOL Annex V: Examples of Compliance Approaches Used by the Shipping Industry, 1989
- Trash on America's Beaches: a National Assessment, 1989
- Persistent Marine Debris, Challenge and Response, The Federal Perspective, 1988
- A Citizen's Guide to Plastics in the Ocean: More than a Litter Problem, 1988
- Plastics in the Ocean: More than a Litter Problem, 1987
- Texas Coastal Cleanup Report, 1986 and 1987

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

Examples of Magazine Articles

- "Shipowners Shape Up on MARPOL Annex V," Marine Log, Vol. 94, No. 8, August 1989 p. 29.
- "The Dirty Seas," Time, August 1, 1988, p. 44.
- "Plastic Reaps a Grim Harvest in the Oceans of the World," Smithsonian, Vol. 18, No. 12, March 1988, p. 58.
- "Tracking Plastic in the Pacific," Defenders, November/December 1988, p.10.
- "The Trashy Sea Around Us," Defenders, May/June 1987, p. 30.
- "A Tide of Plastic," Audubon, Vol. 88, No. 5, September 1986, p. 19.

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POSTERS

Suggested Uses

- Display in garbage collection areas on board vessels, particularly where garbage is generated or where garbage has traditionally been dumped at sea.
- Display in other areas on vessels.

Examples of Existing Posters

Multi-color poster



Full Caption: Stow It, Don't Throw It, It's the Law
Dimensions: 18 by 28 inches
Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

POSTERS (continued)

Blue and white poster



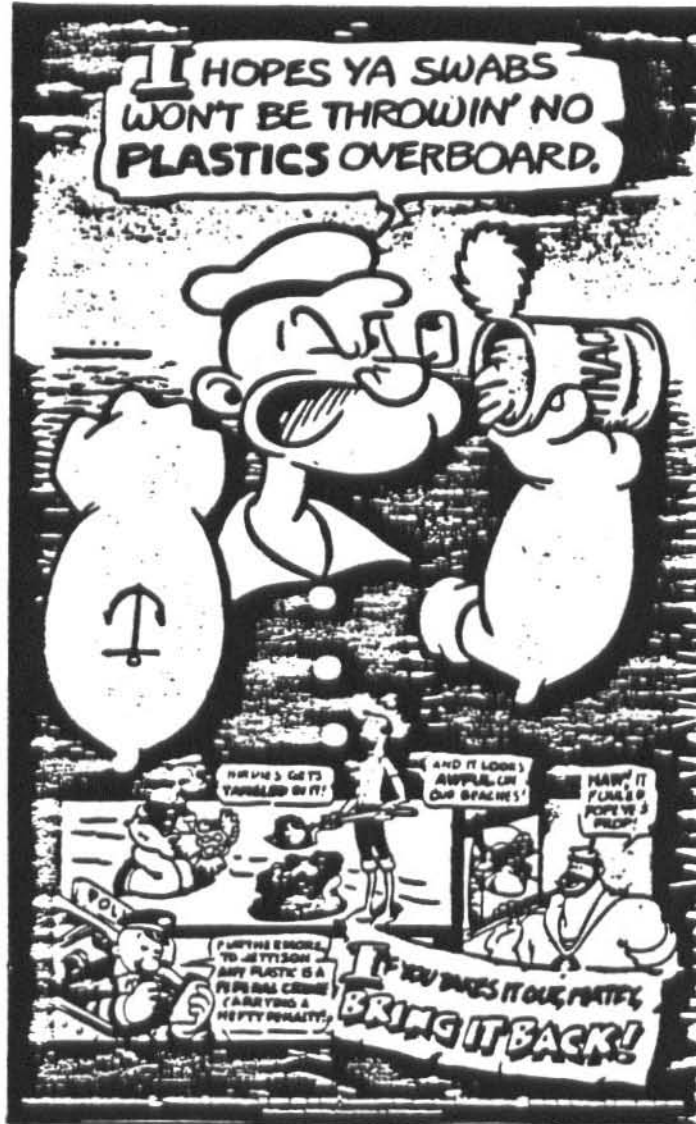
Full Caption: Don't Teach Your Trash to Swim
Packaging, Line, Nets
Thrown Overboard
Hurt You and Other Marine Life
Please Keep Refuse On Board
Until You Land

Dimensions: 11 by 17 inches

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

POSTERS (continued)

Four color poster with Popeye the Sailor, Olive Oyl, Brutus, and Wimpy explaining the problems of marine debris.



Dimensions: 14 by 24 inches

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

POSTERS (continued)

A Partial List of Organizations with Other Posters on Plastics in the Ocean and Marine Debris

- Clean Ocean Action
Building 13
Hartshorne Avenue
Sandy Hook, NJ 07732
- Maine Coast Program
State Executive Department
State Planning Office
Augusta, ME 04333
- Mississippi Department of Wildlife Conservation
Bureau of Marine Resources
Southport Mall
P.O. Box 451
Jackson, MS 39205
- Oregon Department of Fish and Wildlife
P.O. Box 59
Portland, OR 97207
- World Society for the Protection of Animals
29 Perkins Street
P.O. Box 190
Boston, MA 02130

PLACARDS

Suggested Uses

- Display in garbage collection areas on board vessels.
- Incorporate into company procedure manuals.

Note: Proposed U.S. Coast Guard regulations will require that placards be prominently displayed on vessels 26 feet in length or more. The proposed regulations further require that the placard be at least 9 inches wide and 4 inches high with lettering no smaller than 1/8 of an inch in height. The placard must be of durable material, summarize the at sea garbage disposal limitations, and indicate that violations of the garbage disposal limitations may result in a civil penalty of up to a \$25,000 fine and imprisonment.

Examples of Existing Placards

On the following pages are examples of three different approaches to summarizing the MARPOL Annex V garbage disposal limitations.

1. Summary provided in the Coast Guard regulations implementing the pollution prevention requirements of MARPOL Annex V – Appendix A to Subpart D of Part 151 - Summary of Garbage Discharge Restrictions
2. A three color summary which uses color and text to indicate when dumping is permitted as well as when at sea dumping restrictions apply. (The section which outlines the types of garbage that can be dumped at sea is green with black lettering and the section which outlines when dumping is prohibited is red with black lettering.)

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

3. A five color mylar sticker which lists what is illegal to dump and illustrates the distance from shore. This sticker meets proposed U.S. Coast Guard requirements for a placard on MARPOL Annex V.

Available From: NOAA's Marine Debris Information Office
Center for Marine Conservation
1725 DeSales Street, N.W.
Washington, DC 20036
(202) 429-5609

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LIST OF PLASTIC ITEMS ON BOARD

Suggested Uses

- Develop in cooperation with on board personnel.
- Incorporate into vessel's waste management plan.

Getting Started

Plastic items are not always easy to identify. The U.S. Coast Guard regulations implementing the pollution prevention requirements of Annex V of MARPOL 73/78 include a definition of "plastic" and provide a note which includes examples of what is covered under the definition. This definition and explanatory note are a start to a list of plastic items on board. The following is an example of a format to use in identifying and listing plastic items on board. This list can become an integral part of a vessel's waste management plan. Modify the list to meet the needs of individual vessels.

List of Plastic Items On Board

U.S. Coast Guard regulations CFR 33 Part 151.05 define plastic as follows:

Plastic means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers and is formed or shaped during either manufacture of the polymer or fabrication into a finished product by heat or pressure or both.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: Food wrappings, personal hygiene products, packaging (vaporproof barriers, bottles, containers, liners), ship construction (fiberglass and laminated structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, electrical and electronic components), disposable eating utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, synthetic ropes, and lines.

Examples of other common plastic items are:²

- Cigarette pack cellophane wrappers
- Caps to shaving cream cans
- Audio and video cassettes and tape
- Net sacks or bags for vegetables
- Candy wrappers
- Foam cups
- Liners in individual serving size cereal boxes
- 35 mm film and film canisters
- Disposable razors

² Based in part on the "Ship's Guide to Recent Navy Initiatives for Shipboard Solid and Plastics Waste Management" prepared by the Office of the Chief of Naval Operations, November 1988 and the results of surveys of debris collected during beach clean ups.

LIST OF PLASTIC ITEMS ON BOARD (continued)

- Cleaning containers
- Filament tape
- Foam egg cartons
- Fluorescent light covers
- Nylon webbing, cargo nets, and safety harnesses
- Packing materials such as foam sheets, peanuts, or bubble wrap
- Laminated pages
- Yogurt cups
- Milk jugs
- Lids to snack cans such as peanuts and potato chips
- Disposable aprons and gloves
- Packing slip envelopes
- Ball point pens